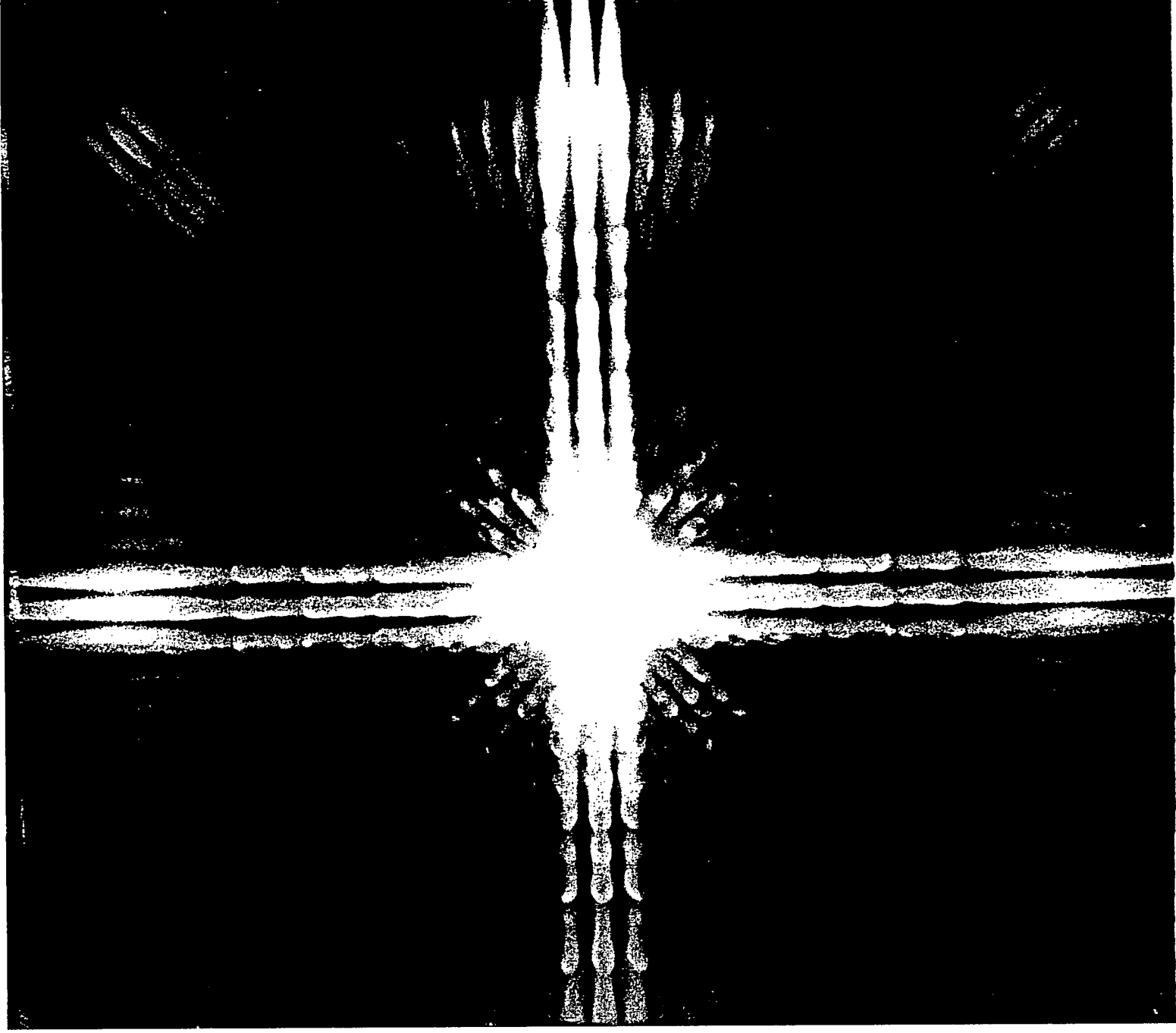


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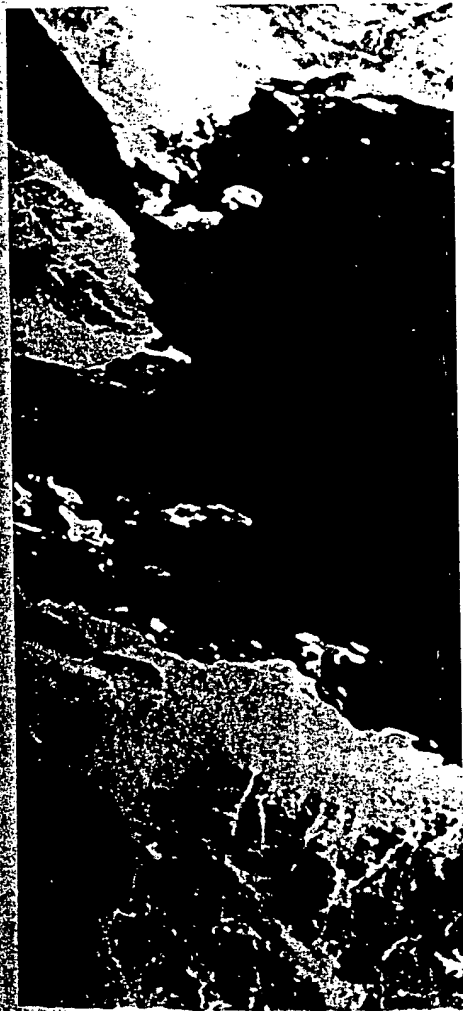
Sybil P. Parker

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the cover. Pattern produced from white light by a computer-generated diffraction plate containing 529 square apertures arranged in a 23 x 23 array. (R. B. Hoover, Marshall Space Flight Center)

On the title pages: Aerial photograph of the Sinai Peninsula made by Gemini spacecraft. (NASA)

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In addition, material has been drawn from the following references: R. E. Hushke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology*, White Sands Missile Range, New Mexico, National Bureau of Standards, AD 467-424; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

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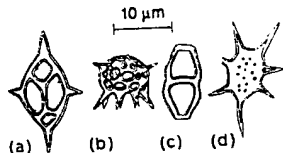
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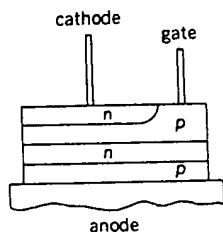
Examples of fossil and modern silicoflagellata. (a) *Dictyocha*, Cretaceous to Recent; (b) *Cannopilus*, Miocene; (c) *Naviculopsis*, Eocene to Miocene; and (d) *Vallacerta*, Upper Cretaceous.

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Periodic table of the chemical elements showing the position of silicon.

SILICON CONTROLLED RECTIFIER



Diagrammatic view of typical silicon controlled rectifier showing four alternate layers of p-type and n-type material.

silica gel [INORG CHEM] A colloidal, highly absorbent silica used as a desiccating and dehydrating agent, as a catalyst carrier, and sometimes as a catalyst. { 'sil-ə-kə 'jel }

silica glass [MATER] A translucent or transparent vitreous material consisting almost entirely of silica. Also known as fused silica; vitreous silica. { 'sil-ə-kə 'glas }

silica sand [GEOL] Sand having a very high percentage of silicon dioxide; a source of silicon. { 'sil-ə-kə 'sand }

silica stone [PETR] A sedimentary rock composed of siliceous minerals. { 'sil-ə-kə 'stōn }

silicate [INORG CHEM] The generic term for a compound that contains silicon, oxygen, and one or more metals, and may contain hydrogen. [MINERAL] Any of a large group of minerals whose crystal lattice contains SiO_4 tetrahedra, either isolated or joined through one or more of the oxygen atoms. { 'sil-ə-kət }

silicate cement [MATER] The silicate of soda glue, used as an adhesive in cardboard and plywood boxes. { 'sil-ə-kət si,ment }

silicate cotton See mineral wool. { 'sil-ə-kət 'kāt-ən }

silicate grinding wheel [DES ENG] A mild-acting grinding wheel where the abrasive grain is bonded with sodium silicate and fillers. { 'sil-ə-kət 'grind-ŋ, wēl }

silicate of soda See sodium silicate. { 'sil-ə-kət əv 'sōd-ə }

silicate paint [MATER] A paint in which the vehicle is water-soluble sodium silicate; used for painting mortar. { 'sil-ə-kət 'pānt }

silication [GEOL] The conversion to or the replacement by silicates. { 'sil-ə-kā-shən }

silicization [MIN ENG] The sealing off of water by the injection of calcium silicate under pressure; sometimes used to reduce the leakage of water through defective lengths of tubing in a shaft. { 'sil-ə,kād-ə 'zā-shən }

siliceous [PETR] Describing a rock containing abundant silica, especially free silica. { 'sə'lish-əs }

siliceous dust [MIN ENG] The dust arising from the dry-working of sand, sandstone, trap, granite, and other igneous rocks; the dust is not soluble in the body fluids, and often results in a form of pneumoconiosis, known as silicosis. { 'sə'lish-əs 'dast }

siliceous earth [GEOL] A loose, friable, soft, porous, lightweight, fine-grained, and usually white siliceous sediment, usually derived from the remains of organisms. { 'sə'lish-əs 'ənth }

siliceous limestone [PETR] 1. A dense, dark, commonly thin-bedded limestone representing an intimate admixture of calcium carbonate and chemically precipitated silica that are believed to have accumulated simultaneously. 2. A silicified limestone, bearing evidence of replacement of calcite by silica. { 'sə'lish-əs 'līm,stōn }

siliceous ooze [GEOL] An ooze composed of siliceous skeletal remains of organisms, such as radiolarians. { 'sə'lish-əs 'ūz }

siliceous sediment [GEOL] A sediment composed of fragmental, concretionary, or precipitated siliceous materials. { 'sə'lish-əs 'sed-ə-mənt }

siliceous shale [PETR] A hard, fine-grained rock with the texture of shale and with as much as 85% silica. { 'sə'lish-əs 'shāl }

siliceous sinter [MINERAL] A white, lightweight, porous, opaline variety of silica, deposited by a geyser or hot spring. Also known as fiorite; geyserite; pearl sinter; sinter. { 'sə'lish-əs 'sīn-tər }

silicic [PETR] Sord of magma or igneous rock rich in silica (usually at least 65); granite is a silicic rock. Also known as oversaturated; persilicic. { 'sə'lis-ik }

silicic acid [INORG CHEM] $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ A white, amorphous precipitate; used to bleach fats, waxes, and oils. Also known as hydrated silica. { 'sə'lis-ik 'as-əd }

silicide [CHEM] A binary compound in which silicon is bonded with a more electropositive element. { 'sil-ə,sīd }

silicide resistor [ELECTR] A thin-film resistor that uses a silicide of molybdenum or chromium, deposited by direct-current sputtering in an integrated circuit when radiation hardness or high resistance values are required. { 'sil-ə,sīd rī'zīstər }

silicification [GEOL] Introduction of or replacement by silica. Also known as silification. { 'sə,liš-ə-fə'kā-shən }

silicified wood [GEOL] A material formed by the silicifica-

tion of wood, generally in the form of opal or chalcedony, in such a manner as to preserve the original form and structure of the wood. Also known as agatized wood; opalized wood; petrified wood; woodstone. { 'sə'lish-ə,fīd 'wūd }

silicinate [GEOL] Pertaining to the silica cement of a sedimentary rock. { 'sə'lish-ən,āt }

siliclastic [PETR] Pertaining to clastic noncarbonate rocks which are almost exclusively silicon-bearing, either as forms of quartz or as silicates. { 'sil-ə'klas-tik }

silicle [BOT] A many-seeded capsule formed from two united carpels, usually of equal length and width, and divided on the inside by a replum. { 'sil-ə-kəl }

silicoblast [INV ZOO] Poriferan amebocytes involved in formation of siliceous spicules. { 'sil-ə-kə,blast }

Silicoflagellata [BOT] A class of unicellular flagellates of the plant division Chrysophyta represented by a single living genus, *Dictyocha*. { 'sil-ə-kō,flaj-ə'lād-ə }

Silicoflagellida [INV ZOO] An order of marine flagellates in the class Phytomastigophorea which have an internal, siliceous, tubular skeleton, numerous yellow chromatophores, and a single flagellum. { 'sil-ə-kō-flaj-ə'lād-ə }

silicomagnesiofluorite [MINERAL] $\text{Ca}_4\text{Mg}_3\text{Si}_2\text{O}_{10}(\text{OH})_2\text{F}_{10}$ A mineral composed of basic calcium magnesium fluoride and silicate. { 'sil-ə-kō-mag,nē-zē-ō'flūr,īt }

silicomanganese [MET] A crude alloy made up of 65–70% manganese, 16–25% silicon, and 1–2.5% carbon; used in the manufacture of low-carbon steel. { 'sil-ə-kō'man'gə,nēs }

silicon [CHEM] A group IV nonmetallic element, symbol Si, with atomic number 14, atomic weight 28.086; dark-brown crystals that burn in air when ignited; soluble in hydrofluoric acid and alkalis; melts at 1410°C ; used to make silicon-containing alloys, as an intermediate for silicon-containing compounds, and in rectifiers and transistors. { 'sil-ə-kən }

silicon bromide See silicon tetrabromide. { 'sil-ə-kən 'brō,mīd }

silicon bronze [MET] An alloy of copper with 1–5% silicon; it is corrosion-resistant and has good mechanical properties. { 'sil-ə-kən 'brānz }

silicon burning [NUC PHYS] The synthesis, in stars, of elements, chiefly in the iron group, resulting from the photodisintegration of silicon-28 and other intermediate-mass nuclei; copious supplies of protons, alpha particles, and neutrons are produced, followed by the capture of these particles by other intermediate-mass nuclei. { 'sil-ə-kən 'bārn-ŋ }

silicon capacitor [ELECTR] A capacitor in which a pure silicon-crystal slab serves as the dielectric; when the crystal is grown to have a p zone, a depletion zone, and an n zone, the capacitance varies with the externally applied bias voltage, as in a varactor. { 'sil-ə-kən kə'pas-əd-ər }

silicon carbide [INORG CHEM] SiC Water-insoluble, bluish-black crystals, very hard and iridescent; soluble in fused alkalis; sublimates at 2210°C ; used as an abrasive and a heat refractory, and in light-emitting diodes to produce green or yellow light. { 'sil-ə-kən 'kār,bīd }

silicon chloride See silicon tetrachloride. { 'sil-ə-kən 'klōr,īd }

silicon controlled rectifier [ELECTR] A semiconductor rectifier that can be controlled; it is a *pnpn* four-layer semiconductor device that normally acts as an open circuit, but switches rapidly to a conducting state when an appropriate gate signal is applied to the gate terminal. Abbreviated SCR. Also known as reverse-blocking triode thyristor. { 'sil-ə-kən kən'trōld 'rek-tə,fi-ər }

silicon controlled switch [ELECTR] A four-terminal switching device having four semiconductor layers, all of which are accessible; it can be used as a silicon controlled rectifier, gate-turnoff switch, complementary silicon controlled rectifier, or conventional silicon transistor. Abbreviated SCS. Also known as reverse-blocking tetrode thyristor. { 'sil-ə-kən kən'trōld 'swīch }

silicon copper [MET] An alloy containing 70–80% copper and 20–30% silicon, used as an addition to molten copper or brass. { 'sil-ə-kən 'kəp-ər }

silicon detector See silicon diode. { 'sil-ə-kən dī'tek-tər }

silicon diode [ELECTR] A crystal diode that uses silicon as a semiconductor; used as a detector in ultra-high- and super-high-frequency circuits. Also known as silicon detector. { 'sil-ə-kən 'dī,ōd }

silicon dioxide [INORG CHEM] SiO_2 Colorless, transparent